

THE MOSSES OF NORTH QUEENSLAND.

BY DR. V. F. BROTHERUS AND THE REV. W. WALTER WATTS.

FOREWORD.

(By the Rev. W. W. Watts.)

The following paragraph is reprinted from my paper, "Some Notes on the Ferns of North Queensland" (These Proceedings, 1914, Vol. xxxix., Part 4, p.756). "In the winter of 1913 (July-August), I spent a month in the Cairns district in search of Ferns and Mosses. I collected in the rich scrub-lands between Bartle Frere and the Russell River, more especially in the neighbourhood of Josephine Creek; around Babinda also, and up Frenchman's Creek to beyond the Second Falls. Babinda and Frenchman's Creek lie at the base of Bellenden Ker, along the coastal railway. Following, later, the main line, I visited Stoney Creek, Kuranda, Atherton, Malanda, Yungaburra, Lake Barrine, and, last and best of all, Ravenshoe and the Tully Falls."

The mosses of North-east Queensland being essentially Malaysian, rather than Australian, in their affinities, specimens from all my packets were submitted to the distinguished expert, Dr. V. F. Brotherus. Despite the war, with its submarine dangers, every parcel reached Helsingfors in safety, and, by the end of 1917, full reports, in return, came to hand. The number of new species is smaller than I anticipated, owing, in part, to the zeal of the late Government Botanist of Queensland, Mr. F. Manson Bailey, C.M.G., F.L.S., but mainly to the aforesaid Malaysian affinities of the flora. The chief feature of the following pages is the large number of new records. No less than seventeen genera new to Australia are listed, and some thirty known species. One new genus, *Pterobryidium*, is described, and there are fourteen new species. In addition, many of the species recorded are new for tropical Queensland, though not new for Australia. The new genus was first found by me, in 1913, at

Ravenshoe, North Queensland; but, curiously enough, was collected, in 1916, by Mr. J. L. Boorman, of the Sydney Botanic Gardens, on Mt. Lindsay on the border between Queensland and New South Wales.

It is interesting to note that a few species, the occurrence of which in Australia was regarded as doubtful by Watts and Whitelegge (*Census Muscorum Australiensium*) are now definitely recorded, such as *Leucobryum sanctum*, *Arthrocormus Schimperii*, *Leucophanes octoblepharoides*, and *Calymperes moluccense*.

It remains, on behalf of Australian botanists, to express sincere thanks to Dr. Brotherus for his continued and generous assistance; and also to thank the Director of the Sydney Botanic Gardens for the facilities afforded me at the National Herbarium for working up my material.—W.W.W.

Note.—The sign * before a generic or specific name denotes that it is new for Australia; and the sign † that it is new for tropical Queensland.

A. ACROCARPI.

Dicranaceæ.

TREMATODON Michx.

†T. LONGESCENS C.M.

Barron River, n. 386; Frenchman's Creek, n. 419.

[*Note.*—*Trematodon Baileyi* Broth., belongs also to the Cairns district (Mulgrave River), but appears not to have been collected since Bailey found it in 1889.]

PLEURIDIUM Brid.

PLEURID. sp. ster. incerta.

Track down to Redlynch Railway Station, near Cairns. No *Pleuridium* previously recorded for Queensland.

*GARCKEA C.M.

*G. PHASCOIDES (Hook.) C.M.

Babinda, n. 326 e.p. Previous record, "Southern Asia."

DITRICHUM Timm.

D. AFFINE C.M.

Ravenshoe, n. 457.

DICRANELLA Schimp.

D. DIETRICHÆ (C.M.) Jaeg.

Ravenshoe, n. 447-8.

D. PYCNOGLOSSA (Broth.) Par.

Stoney Creek: Babinda; Malanda. Kuranda: Mrs. Brotherton.
First found by Mr. F. M. Bailey on the Mulgrave River in 1889.

Var. LONGIFOLIA Broth. et Watts, var. nov.

Street's Gully, Kuranda, n. 265.

H O L O M I T R I U M Brid.

H. MUELLERI Hampe.

Ravenshoe, n. 573 e.p. Previous records, Rockingham Bay :
Dallachy, 1868; Bellenden Ker : S. Johnson, 1891.

H. PERICHÆTIALE (Hook.) Brid.

Ravenshoe and Malanda (several nos.).

D I C R A N O L O M A Ren.

D. DICARPUM (Hsch.) Par.

Ravenshoe, several nos.

D. SERRATUM (Broth.) Par.

Malanda, n. 494. 615 e.p. (Previous Queensland record, Mt.
Mistake : Bailey, 1885).

D. WATTSHI Broth., n.sp.

Dioicum; glauco-viride, nitidiusculum; *caulis* usque ad 5 cm. longus, adscendens, inferne denudatus, dein dense foliosus, simplex vel parce ramosus; *folia* horride patula, stricta, late lanceolata, breviter acuminata, 4-4.5 mm. longa et 2-2.5 mm. lata, marginibus erectis, summo apice conniventibus ibidemque argute serratis, ubique hyalino-limbata, limbo latissimo, apicem versus sensim angustiore, nervo tenui, continuo, dorso superne argute serrato, cellulis chlorophyllosis, elongate et anguste linearibus, apice brevioribus, alaribus numerosis, quadratis, fusco-aureis, sæpe decoloratis; bractæ perichætii internæ e basi longe vaginante convoluta subito in pilum longiusculum contractæ; setæ binæ ex eodem perichætio, tenues, vix ultra 5 mm. altæ, fusciculæ; theca oblonga, obliqua, subcernua, collo strumuloso; operculum e basi conica longe et oblique subulatum.

Ravenshoe, n. 534a (type).

Species *D. austro-scopario* (C. Muell.) affinis, sed foliis latioribus, brevius acuminatis, setis binis ex eodem perichætio, brevioribus et tenuioribus dignoscenda.

[Note. — *D. austro-scoparium* (C.M.) was collected by Bailey, in 1889, on the summit of Bellenden Ker.]

L E U C O L O M A Brid.

L. SIEBERIANUM (Hornsch.) Par.

Ravenshoe (several nos.).

L. SUBINTEGRUM Broth.

Babinda: Frenchman's Creek; Malanda: Ravenshoe (frequent). [Originally found at Palm Camp, Bellenden Ker, by Bailey (1889)].

[Note. — *L. clarinerve* C.M., is recorded for "Tropical Queensland" in Bailey's Suppl. to his Synopsis, 1888.]

C A M P Y L O P U S Brid.

C. (*Rigidi*) WATTSII Broth., n.sp.

Dioicus; robustiusculus, cæspitosus, cæspitibus densis, viridissimis, subopacis; *caulis* adscendens, usque ad 3 cm. longus, fere ad apicem rubro-tomentosus, simplex vel furcatus; *folia* sicca imbricata, humida patentia, canaliculato-concava, lanceolato-subulata, c. 6 mm. longa et c. 0.8 mm. lata, superne margine et dorso serrata, nervo basi dimidiam partem folii latitudinis occupante, dorso lamelloso, lamina usque ad apicem distincta, cellulis minutis, rhombeis, haud incrassatis, basilaribus in seriebus pluribus quadratis, alaribus teneris, fuscis, auriculas distinctissimas efformantibus. Cætera ignota.

Cairns district, Frenchman's Creek, Second Falls, n. 366; Ravenshoe, on rocks above Falls, near Major's, n. 484 e.p.: Watts, 1913.

†C. WOOLLSII (C.M.) Par.

Ravenshoe, n. 452, 459, 532.

E U C A M P T O D O N Mont.

†E. MUELLERI Hpe. et C.M.

Ravenshoe and Malanda,

Leucobryaceæ.

LEUCOBRYUM Hampe.

†*L. BALLINENSE* Broth., A.M., vi., 1916, n.199.

Ravenshoe, n.534 c, d; Malanda, n.550 e.p. Ballina, N.S.W., the only previous record.

L. BRACHYPHYLLUM Hpe.

Babinda; Frenchman's Creek; Ravenshoe.

L. CANDIDUM Brid.

Frenchman's Creek, n.397 e.p.; near Babinda, n.445 e.p. Apparently the first record for N.Q.

L. SANCTUM (Brid.) Hampe.

Kuranda; Bartle Frere; Babinda; Frenchman's Creek; Malanda. Widespread "from Nepal to Malesia" (teste Broth.).

†*L. STRICTIFOLIUM* Broth.

Ravenshoe, n. 469, 672. Previously limited to N. S. Wales and S. Queensland.

[*L. vesiculosum* C.M., was collected, at Whelanian Pools, Palm Camp and Harvey's Camp, Bellenden Ker, by F. M. Bailey, in 1889; and at Trinity Bay, by Mrs. (or Miss) Gribble, in 1894. *L. viride* Mitt., is recorded, in Herb. Melb., for Daintree River, Q., but information regarding this sp. is needed. *L. Wattsi* Broth., was collected by Dallachy at Rockingham Bay, Q., but named *L. sanctum* var. in Hb. Melb.]

LEUCOPHANES Brid.

L. AUSTRALE Broth.

Kuranda, n.435. Previously recorded for Freshwater Creek, near Cairns, and "Ker Range" (teste C.M.).

L. OCTOBLEPHAROIDES Brid.

Kuranda; Bartle Frere; Frenchman's Creek; Babinda; Malanda. Previously recorded, in Hb. Melb., for Johnstone River (Berthaud), and Daintree River (Pentzke). Distrib. "from Nepal to Pacific Islands."

OCTOBLEPHARUM Hedw.

O. ALBIDUM (L.) Hedw.

Cairns; Kuranda; Malanda; Ravenshoe.

ARTHROCORMUS Doz. et Molk.

A. SCHIMPERI D. et M.

Babinda, n. 422, 438. In the Melb. Herb., there is a doubtful record of "*Leucobryum*" *Schimperi* for the Johnstone River. *A. Schimperi* is found in the Indian Archipelago, the New Hebrides, etc.

*EXODICTYON Card.

*E. SUBSCABRUM (Broth.) Card.

Frenchman's Creek, n. 394*b*. Previous record, Papua.

Fissidentaceæ.

FISSIDENS Hedw.

†F. ARBOREUS Broth.

Stoney Creek; Babinda; Lake Barrine; Ravenshoe.

†F. ASPLENIODES (Sw.) Hedw.

Ravenshoe, n. 471, 533 e.p.

F. (*Semilimbidium*) CAIRNENSIS Broth. et Watts, n.sp.

Dioicus(?): gregarie crescens, pallide viridis, opacus; caulis usque ad 5 mm. longus, cum foliis usque ad 19 mm. latus, infima basi fusco-radiculosus, dense foliosus, simplex vel furcatus; folia sicca homomallula, humida stricta, erecto-patentia, infima minuta, dein subæqualia, ligulata, breviter acuminata, acuta, c. 1.3 mm. longa et c. 0.38 mm. lata, marginibus superne minutissime serrulatis, lamina vera ad medium folii producta, basi limbo albido, e cellulis angustissimis constructo, lamina dorsali e basi nervi enata, ibidemque rotundata, nervo crassiusculo, lutescente, infra summum apicem folii evanido, cellulis rotundato-hexagonis, 0.007-0.010 mm., pellucidis, papilla media instructis; seta terminalis, solitaria, rarius binæ ex eodem perichætio, usque ad 2 mm. alta, tenuis, rubra, levissima; theca inclinata vel nutans, minuta, ovalis, pallida; operculum e basi conica recte rostratum; calyptra ignota. Planta mascula ignota.

Near Hotel, Babinda, Cairns district, on rotten logs, n. 332*a* (leg. Watts).

Species limbo brevi cellulisque pellucidis, papilla media instructis dignoscenda.

†F. DIETRICHÆ C. M.

Ravenshoe, n. 465 e.p., 528 e.p., 529 e.p.

F. KERIANUS C.M.

Cairns, n. 234a, 243; Stoney Creek, n. 252.

F. (*Aloma*) KURANDÆ Broth. et Watts, n.sp.

Corticola, gregarie crescens, pallide viridis; caulis adscendens, usque ad 8 mm. longus, cum foliis c. 1.5 mm. latus, basi fusco-radiculosus, dense foliosus, simplex; folia usque ad 18-juga, sicca homomalla, humida erecto-patentia, infima minuta, dein subæqualia, ligulata, breviter acuminata, obtusiuscula, apiculata, c. 1 mm. longa et c. 0.25 mm. lata, elimbata, integra, lamina vera ad medium folii producta, lamina dorsali e basi nervi enata, ibidemque rotundata, nervo pallido, in apiculo folii evanido, cellulis valde pellucidis, rotundato-hexagonis, 0.010-0.015 mm., ad basin laminæ veræ paucis, elongatis, limbum inframarginalem valde indistinctum efformantibus. Cætera ignota.

Kuranda, n. 273 (leg. Watts, 1913).

Species habitu *F. Holliano* Doz. et Molk., similis, sed cellulis pellucidis, multo majoribus jam dignoscenda.

†F. PALLIDUS H.f.W.

Ravenshoe, n. 470; Malanda, n. 512.

†F. TENELLUS H.f.W.

Ravenshoe, n. 500 e.p.

*F. ZIPPELIANUS Bryol. jav.

Babinda, n. 308 e.p., 343. Previous records, Sumatra, Java, Hongkong.

[*Note.*—The following also is recorded for N.Q.: *F. microlecythis* C.M. (Trinity Bay), but the name alone has been published (C.M., *Genera Muscorum*, p.59).]

Calymperaceæ.

SYRRHOPODON Schwgr.

*S. AMÆNUS Broth.

Frenchman's Creek, n. 368 e.p., 385, 393; Babinda, n. 439. Previous record, Papua.

S (*Cavifolii*) *CAIRNENSIS* Broth. et Watts, n.sp.

Dioicus; tenellus, cæspitosus, cæspitibus laxiusculis, pallide viridibus; caulis erectus, vix ultra 4 mm. longus, basi fusco-radiculosus, dense foliosus, simplex vel ramosus; folia sicca circinato-incurva, dorso nitidiuscula, humida erecto-patentia, e basi paulum latiore ligulata, obtusa, mucronatula, usque ad 1·7 mm. longa, superne 0·25-0·27 mm. lata, limbata, limbo angustissimo, hyalino, infra apicem minute serrulatam evanido, in parte superiore basis ciliato-serrato, nervo crassiusculo, infra summum apicem folii evanido, inferne levi, dein parce aculeato-papilloso, cellulis laminalibus acute et elevato-papillois, basilariibus laxis, inanibus, breviter rectangularibus vel subquadratis. Cætera ignota.

Cairns district, Babinda, on tree-trunks, n. 313*a* (leg. Watts, July, 1913).

Species distinctissima, a *S. fimbriatulo* Sauerb., foliis multo brevioribus, nervo inferne levi, superne parce aculeato-papilloso facillime dignoscenda.

**S. CROCEUS* Mitt.

Frenchman's Creek, n. 418 e.p. An Indo-Malayan species.

S. FASCICULATUS Hook. et Grev.

Base of Bartle Frere; Babinda; Frenchman's Creek, etc. Previous record, Johnstone River: Berthaud, Dec., 1882. A widespread tropical species.

†*S. FIMBRIATULUS* Sauerb. *S. fimbriatus* C.M., non Mitt.

Frenchman's Creek, n. 408; Tully Falls, n. 462.

**S. MUELLERI* (Doz. et Molk., *Calymperidium*) Lac.

Frenchman's Creek, n. 361, 368 e.p. An Indo-Malayan-Polynesian species.

S. NOVÆ VALESIÆ C.M.

Ravenshoe, n. 461, 468, 531*a*. A forma *microcarpa* was collected at Trinity Bay by Sayer, in 1886; otherwise new for Q.

S. UNDULATULUS Broth.

Babinda, n. 313 e.p.; Frenchman's Creek, n. 421 e.p.; Kuranda, n. 427. Previous record, Bellenden Ker: Mrs. Gribble (Herb. Melb.).

**S. UNDULATUS* (Doz. et Molk.) Lindb.

Base of Bartle Frere, n. 293; Babinda, n. 310; Frenchman's Creek, n. 405, 412, 414, 420 e.p., 421. Previous record, Sunda Islands.

[Note.—*S.* (*Thyridium*) *humile* Mitt., is recorded in the Melb. Herb. for Johnstone River (leg. Berthaud).]

CALYMPERES Sw.

†*C. MOLUCCENSE* Schwgr.

Frenchman's Creek, n. 372. Hampe, in Pl. Preiss, recorded it for West Australia, but this record is not found in Mitten's Catalogue, nor in Jaeger's Adumbratio. It is almost certainly new for Australia. Previous range, the Moluccas.

C. NIGRESCENS Broth. et Geh.

Cairns: Allen, Sept., 1906 (Herb. J. M. Murdoch). Earlier record, Bellenden Ker: Mrs. Gribble (Herb. Melb.).

**C. SERRATUM* A.Br.

Malanda, n. 497, 530. Previous records, Java, New Hebrides, etc.

**C. TENERUM* C.M.

Fig-tree, Police Paddock, Cairns, n. 226-8, 230, 232; base of Bartle Frere, n. 285. Previous range, Indo-Malaysia.

[Note.—*C. Motleyi* Mitt., is recorded for Cape Yorke (leg. Micholitz, 1897); and *C. Kennedyanum* Hampe, (1876) was found at Rockingham Bay by E. B. Kennedy, and at Goode Island by Powell in 1883.]

Pottiaceæ.

WEISIA Hedw.

W. VIRIDULA (L.) Hedw.

Ravenshoe, n. 475 (f. *eperistomata*).

HYOPHILA Brid.

**H. MICHOLITZII* Broth.

Stoney Creek, n. 237 e.p., 261. Previous record, Papua.

BARBULA Hedw.

B. CALYCINA Schwgr.

Ravenshoe, n. 464 e.p.

Grimmiaceæ.

GLYPHOMITRIUM Brid.

†G. COMMUTATUM (C.M.) Broth.

Ravenshoe, n. 463 e.p., 488, 532 e.p.

Orthotrichaceæ.

MACROMITRIUM Brid.

†M. DAEMELII C.M.

Ravenshoe, n. 490, 536, 616 e.p.

†M. DIMORPHUM C.M.

Stoney Creek, n. 258; Ravenshoe, n. 485; Malanda, n. 491; Kuranda, n. 511, 607*b*.

M. HEMITRICHODES Schwgr.

Ravenshoe, several nos.

†M. PUGIONIFOLIUM C.M.

Malanda, n. 493, 495; Ravenshoe, n. 506; Yungaburra, n. 520. Earlier records limited apparently to N.S.W.

†M. SCOTTIÆ C.M.

Ravenshoe, n. 481, 486, 534*b*. Previous record, N.S.W., from Monga and Nowra northwards to the Richmond River.

[Note.—*M. aurescens* Hpe., is recorded from Mt. Archer, near Keppel Bay (leg F.v.M.); *M. microstomum* (Hook. et Grev.), for Rockingham Bay (Dallachy, 1868); *M. pusillum* Mitt., from Tringilburra Creek, Bellenden Ker (F. M. Bailey); *M. Sayeri* Mitt., from the Russell River (W. A. Sayer, 1886, Herb. Melb.), and *M. Whiteleygei* Broth. et Geh., from Bellenden Ker and Bartle Frere (S. Johnson, 1891).]

SCHLOTHEIMIA Brid.

S. BAILEYI Broth.

Ravenshoe, several nos. The original record was Bellenden Ker; the species spreads south well into N.S.W., and probably into Victoria.

Splachnaceæ and Funariaceæ.

These two families are quite unrepresented in my N.Q. collection, but the following record may be noted: *Goniomitrium acuminatum* H.f.W., (Clermont, Miss Gore).—W.W.W.

Bryaceæ.

BRACHYMENIUM Schwgr.

B. (*Dicranobryum*) WATTSII Broth., sp.n.

Dioicum; gracilescens, cæspitosum, cæspitibus densis, lutescenti-viridibus, sericeo-nitidis; caulis erectus, vix ultra 1 cm. longus, inferne fusco-radiculosus, dense foliosus, simplex; folia imbricata, ovata, breviter acuminata, aristata, marginibus basi recurvis, integris, nervo lutescente, in aristam denticulatam excedente, cellulis superioribus elongate et anguste rhomboideis, basilaribus et alaribus quadratis. Cætera ignota.

Ravenshoe (Millstream), n. 489 and 527 (leg. Watts, 1913). Species *Br. acuminato* Harv., valde affinis, sed statura paulum robustiore, foliisque brevius acuminatis dignoscenda.

* ANOMOBRYUM Schimp.

* A. CYMBIFOLIUM (Lindb.) Broth.

Ravenshoe, n. 464 e.p., 521b, 532 e.p. Previous range, India to Java and Amboina.

BRYUM Dill. emend. Schimper.

† B. ARGENTEUM L., var. NIVEUM H.f.W.

Ravenshoe, n. 463 e.p., 521 e.p.

† B. ERYTHROCARPOIDES Hpe. et C.M.

Kuranda, n. 429; Malanda, n. 521 e.p.

B. (*Alpiniformia*) KURANDÆ Broth. et Watts, n.sp.

Dioicum; gracilescens, cæspitosum, cæspitibus densiusculis, pallide lutescenti-viridibus, nitidis; caulis vix ultra 5 mm. longus, basi radiculosus, dense foliosus, innovationibus pluribus erectis, vix ultra 5 mm longis, strictis, julaceis, obtusis; folia caulina erecto-patentia, carinato-concava, oblongo-lanceolata, breviter acuminata, acuta, marginibus anguste recurvis, apice minutissime serrulatis, nervo tenui, brevissime excedente, cellulis elongate et anguste hexagono-rhomboideis, basilaribus laxioribus, alaribus breviter rectangularibus; seta 1.15 cm. vel paulum ultra alta, tenuissima, fuscescenti-rubra; theca nutans, minuta, cum collo sporangii longitudinis, pyriformis, c. 2.5 mm. longa et c. 0.95 mm. crassa, sicca deoperculata sub ore haud constricta, macrostoma,

fusca; exostomii dentes lineari-lanceolati, subulato-acuminati, rufi, apice hyalini, dense lamellati; endostomium luteum, minutissime papillosum, membrana basilaris ultra medium dentium producta; processus lanceolati late fenestrati; cilia terna bene evoluta, longe appendiculata. Cætera ignota.

Damp wall of creek by Railway line, near Kuranda, n. 498 (leg: Watts, 1913).

Species innovationibus julaceis, theca minuta, macrostoma oculo nudo jam dignoscenda.

†*B. PIMPANÆ* C.M.

Wall of creek by railway, near Kuranda, n. 679.

†*B. SUBATROPURPUREUM* C.M.

Malanda, n. 505; Millstream, Ravenshoe, n. 521 α .

†*B. SUBOLIVACEUM* C.M.

Millstream, Ravenshoe, n. 525 e.p; Kuranda, n. 535.

B. SUBPACHYOMA Hampe.

Stoney Creek, n. 249, 255, 259 Earlier record, Rockingham Bay (Dallachy, 1869).

[*Note*.—The following records should be noted: *B. Baileyi* Broth., (Freshwater Creek, near Cairns, Bailey, 1889; Bellenden Ker, S. Johnson); *B. leptothrix* C.M., (Trinity Bay, Karsten, 1881).]

R H O D O B R Y U M (Schimp.) Hampe.

†*R. OLIVACEUM* Hpe.

Ravenshoe, n. 506.

†*R. SUBCRISPATUM* (C.M.) Par.

Yungaburra, on hillside, n. 501.

Mniaceæ.

M N I U M (Dill. exp.) L., emend. Schimper.

MN. sp.(?).

Ravenshoe, n. 517 e.p.

MN. sp.(?), probably sp.nov.

(?)*Loc.*, n. 522.

Rhizogoniaceæ.

RHIZOGONIUM Brid.

†RH. GEHEEBII C.M.

Ravenshoe, n. 483, 502.

RH. PARRAMATTENSE C.M.

Ravenshoe, n. 523, 615 e.p.; Malanda, n. 618c. A southern species, but already recorded (in Hb. Melb.) for Bellenden Ker.

RH. SPINIFORME (L.) Bruch.

Malanda, Kuranda, and Ravenshoe, including f. minor, n.482, 492 (previously recorded from N.S.W., and S.Q.).

[Note.—*Rh. brevifolium* Broth., was collected on Bellenden Ker by F. M. Bailey (1889), also by S. Johnson, on the same range, and on Bartle Frere in 1891.]

MESOCHÆTE Lindb.

M. UNDULATA Lindb.

Babinda, n. 387. Common in the south, with, also, a record for Port Denison (Birch, 1889).

Bartramiaceæ.

PHILONOTIS Brid.

*PH. LAXISSIMA (C.M.) Bry. jav.

Babinda, n. 334; *forma*, Ravenshoe, n. 517, 524.

†PH. PSEUDOMOLLIS (C.M.) Jaeg.

Ravenshoe, n. 489 e.p., 516; Barron River, n. 496, 534g.

Polytrichaceæ.

POLYTRICHUM Dill.

P. JUNIPERINUM Hedw.

Ravenshoe, n. 519.

B. PLEUROCARPI.

Cryphæaceæ.

CRYPHÆA Mohr.

C. TENELLA Hornsch.

Ravenshoe, n. 610 e.p., 616 e.p.

C R Y P H I D I U M (Mitt.) Broth.

C M U E L L E R I (Hampe) Par.

Ravenshoe (Millstream, etc.), several nos.

C y r t o p o d a c e æ.

B E S C H E R E L L E A Dub.

B. C Y R T O P U S F.v.M.; *B. brevifolia* Hpe.

Ravenshoe, several nos.

P t y c h o m n i a c e æ.

H A M P E E L L A C.M.

H. P A L L E N S (Lac, *Cladomnion*) Fleisch.; *Lepidopilum australe*
Broth.; *Hampeella Kurzii* C.M.

Tully Falls, n.591. [Previously recorded from Harvey's Creek:
Bailey, 1889].

Æ d i e l a d i a c e æ.

*M Y U R I U M Schimp., Fleischer.

*M. R U F E S C E N S (Hsch. et Reinw.) Fleisch.

Ravenshoe, n.534e (f. depauperata). Range, Indo-Malaysia.

N e e k e r a c e æ.

T R A C H Y L O M A Brid.

T. P L A N I F O L I U M (Hook.) Brid.

Ravenshoe, n. 543; Malanda, n. 650 e.p.

E N D O T R I C H E L L A C.M.

E. D I E T R I C H I Æ C.M.

Babinda, n. 440; Ravenshoe, n. 558, 572b, 616 e.p.; track to
Tully Falls, n. 561.

E. L E P I D A C.M.

Frenchman's Creek, 417 e.p.; Kuranda, 511 e.p., 607e; Ravens-
hoe, 476 e.p., 564 e.p.

G A R O V A G L I A Endl.

G. M U E L L E R I (Hpe.) Mitt.

Kuranda; Babinda; Malanda; Ravenshoe, etc.

M U E L L E R I O B R Y U M Fleisch.

M. W H I T E L E G G E I (Broth.) Fl.

Stoney Creek; Babinda; Frenchman's Creek; Malanda;
Ravenshoe.

**PTEROBRYOPSIS* Fleisch.*P. FILIGERA* Broth. et Watts, n.sp.

Dioica; gracilis, gregarie crescens, læte viridis, nitidiuscula; caules secundarii usque ad 3 cm. longi, inferne simplices, nudi, dein densissime pinnatim ramosi, filis elongatis, sat numerosis, articulatis, papillois instructi, ramis erecto-patentibus, vix ultra 6 mm. longis, complanatis, simplicibus, obtusis; folia imbricata, subcymbiformi-concava, dorso lævia, ovato-oblonga, breviter acuminata, acuta, marginibus erectis, ubique serrulatis, nervo tenui, subcontinuo, dorso superne serrato, cellulis angustissimis, apice papillose exstante, basilaribus infimis laxioribus, alaribus sat numerosis quadratis. Cætera ignota.

Malanda, on trunks of trees, n. 549: Ravenshoe, on trunks of trees, n. 605a.

PTEROBRYIDIUM Broth. et Watts, n.gen.*PT. AUSTRALE* B. et W., n.gen. et sp.

Dioicum; robustiusculum, læte viride, ætate lutescens, nitidum; caulis primarius longe repens, plus minusve fusco-radiculosus; caules secundarii conferti, rigidi, superne sæpe arcuati, usque ad 12 cm. longi, dense foliosi, plerumque obtusi, rarius flagelliformiter attenuati, inferne simplices, dein plus minusve regulariter pinnati, ramis patulis, teretibus arcuatulis, usque ad 2 cm. longis, obtusis vel plus minusve longe, rarius flagelliformiter attenuatis, simplicibus, rarius longioribus, parce ramulosis; folia caulina infima, minuta, dein sensim accrescentia, cochleariformi-concava, sicca imbricata, lævia, late ovalia, apiculo lato, obtuso, recurvulo terminata, nervo simplici basi validiusculo, dein raptim tenuiore, ultra medium folii evanido, cellulis inter se porosis, linearibus, chlorophyllosis, basilaribus infimis fusco-aureis, alaribus numerosis, subquadratis: bracteæ perichætii erectæ, concavæ, internæ oblongæ, raptim breviter acuminatæ, c. 5 mm. longæ et c. 1.5 mm. latæ, integræ, nervo tenui, vix ad medium bracteæ producto, cellulis linearibus, inter se valde porosis, basilaribus laxioribus; seta c. 1 mm. alta, stricta, fusca; theca immersa, breviter ovalis, sicca deoperculata sub ore paulum constricta, c. 2 mm. longa et c. 0.90 mm. crassa, fusca; peristomium duplex, infra

orificium oriundum, rufum, læve, cum præperistomio; exostomii dentes anguste lanceolati, linea dorsali recta, articulationibus lamelliformibus: corona basilaris rudimentaria; processus angusti; sublineares. Cætera ignota.

North Queensland: Malanda, n. 619*a*; Ravenshoe in scrub, n. 551 e.p., 555, 556, 557 e.p. (Watts, 1913). Queensland-N.S.W.: Mt. Lindsay (J. L. Boorman, n. 1522 in Herb. Syd.).

Genus novum insigne, habitu foliorumque structura speciebus nonnullis *Pterobryopsisidis* simillimum, sed theca immersa nec non peristomio dignoscendum.

P A P I L L A R I A (C.M.) C.M.

P. AMBLYACIS (C.M.) Jaeg.

Lake Barrine, n. 636.

P. FLEXICAULIS (Tayl.) Jaeg.

Ravenshoe, n. 556 e.p., 610 e.p., 654*a*; Malanda, n. 619 e.p., 647.

P. KERMADECENSIS (C.M.) Jaeg.

Babinda; Malanda; Ravenshoe; several nos.

†P. NITIDIUSCULA Broth.

Malanda, n. 618 e.p., 619*b*. Previous records, N.S.W.

M E T E O R I U M Doz. et Molk.

M. BAILEYI (Broth., *Papillaria*) Broth., *Bryales*, p. 818.

Ravenshoe; Malanda; Yungaburra; several nos.

*M MIQUELIANUM (C.M.) Fleisch.

Malanda; Ravenshoe; several nos.

A E R O B R Y O P S I S Fleisch.

A. SIGMATOPHYLLA (C.M.).

Base of Bartle Frere; Babinda; Frenchman's Creek; Malanda; Lake Barrine; Ravenshoe: many nos.

*F L O R I B U N D A R I A C.M.

*FL. FLORIBUNDA (Doz. et Molk., *Meteorium*) Fleisch.

Malanda, n. 494*b*, 619*e*; Yungaburra, n. 668 e.p.: Ravenshoe, n. 579.

*FL. PSEUDOFLOBUNDA Fleisch.

Malanda, n. 651 e.p., 655; Ravenshoe, n. 582, 624 e.p., 656.

FL. ROBUSTULA Broth. et Watts, n. sp.

Dioica; robustiuscula, pallide lutescenti-viridis, opaca; caulis secundarius breviusculus, dense pinnatim ramosus, ramis patulis, usque ad 2 cm. longis, apicem versus decrescentibus, laxiuscule foliosis, simplicibus, obtusis; folia ramea horride patula, e basi cordato-ovata lanceolato-subulata, comalia in pilum flexuosum, denticulatum attenuata, marginibus basi uno latere inflexis, apice crenulatis, nervo tenui, ultra medium folii evanido, cellulis elongatis, angustis, seriatim papillois. Cætera ignota.

N. Queensland: Malanda, on tree-trunks, n. 618a.

Species statura robustiuscula foliisque horride patulis oculo nudo jam dignoscenda.

BARBELLA (C.M.) Fleisch.

B. ENERVIS (Thw. et Mitt.) Fl.; *Neckera trichophoroides* Hpe. Ravenshoe, n. 558, 624, 628 e.p.

*METEORIOPSIS Fleisch.

*M. RECLINATA (C.M.) Fl.

Malanda, 604, etc.; Yungaburra, n. 626a; Ravenshoe, 541, etc.

*TRACHYPUS Reinw. et Hornsch.

*T. NOVÆ CALEDONIÆ C.M.

Malanda, n. 633.

ORTHORRHYNCHIUM Reichdt.

O. CYMBIFOLIOIDES C.M.

Ravenshoe, n. 600, 605 e.p., 611 e.p.

CALYPTOTHECIUM Mitt.

C. ACUTUM (Mitt.) Broth.

Babinda, n. 317; Ravenshoe, n. 551, etc.

C. HUMILE (Mitt.) Broth.

Ravenshoe, n. 557 e.p.; Yungaburra, 612, etc.; Malanda, n. 619g.

C. RECURVULUM (C.M., *Trachyloma*) Broth.

Babinda, n. 312 e.p.

NECKEROPSIS Reichdt., emend. Fleisch.

N. LEPINEANA (Mont.) Broth.

Malanda; Ravenshoe; Yungaburra: several nos.

*HIMANTOCLADIUM (Mitt., *Neckera*) Fleisch.

*H. LORIFORME (Bryol. jav.) Fl.

Base of Bartle Frere, n. 294; Babinda, n. 437.

*HOMALIODENDRON Fleisch.

*H. EXIGUUM (Bryol. jav., *Homalia*) Fl.

Ravenshoe, n. 546, 576e.

*H. FLABELLATUM (Dicks, Sm., *Hookeria*) Fl.

Ravenshoe, n. 547-8, 564 e.p., 609.

*PINNATELLA (C.M.) Fleisch.

*P. INTRALIMBATA Fl.

Ravenshoe, n. 600a, 611, 632, 667 e.p.

Lembophyllaceæ.

CAMPTOCHÆTE Reichdt.

C. BRISBANICA (C.M.).

Ravenshoe, n. 542, 595, 648 e.p.; Lake Barrine, n. 636.

C. VAGA (Hornsch.) Broth.

Babinda; Frenchman's Creek; Malanda: several nos.

Entodontaceæ.

*CAMPYLODONTIUM Doz. et Molk.

*C. FLAVESCENS (Hook., *Pterogonium*) Bryol. jav.

Ravenshoe, n. 538, 581 e.p.

Fabroniaceæ.

*AUSTINIA C.M.

*A. LUZONENSIS Broth.

Ravenshoe, n. 667 e.p.

Hookeriaceæ.

DISTICHOPHYLLUM Doz. et Molk.

D. BAILEYANUM C.M.

Kuranda; Ravenshoe; Yungaburra: several nos.

CYCLODICTYON Mitt.

C. LEPIDUM (Mitt.); *Hookeria karsteniana* Broth. Geh.

Yungaburra, n. 576a, 674.

CALLICOSTELLA (C.M.) Jaeg.

*C. KÆRNBAECHII Broth.

Kuranda, n. 266, 272; Babinda, 332 *bis*.

CHÆTOMITRIUM Doz. et Molk.

CH. ENTODONTOIDES Broth. et Watts, n.sp.

Dioicum; gracile, cæspitosum, cæspitibus laxis, mollibus, depressis, lutescenti-viridibus, nitidiusculis; caulis repens, fusco-radiculosus, dense et complanate foliosus, dense pinnatim ramosus, ramis vix ultra 1 cm. longis, complanatis, obtusis; folia erecto-patentia, concaviuscula, ovato-oblonga, rotundato-obtusa, dorso lævia, marginibus erectis vel basi anguste recurvis, superne argute denticulatis, nervis binis, brevibus, indistinctis, cellulis angustissimis, linearibus, infima basi brevioribus et latioribus, aureis, omnibus lævissimis. Cætera ignota.

North Queensland: Frenchman's Creek, Cairns District, n.352.

Species distinctissima, habitu entodontoideo foliorumque forma facillime dignoscenda.

CH. GEHEEBII Broth.

Babinda, n. 336a.

CH. NEMATOSUM Broth.

Babinda; Frenchman's Creek; Ravenshoe: several nos.

Lepidopilum australe. See *Hampeella pallens*.

Hypopterygiaceæ.

HYPOPTERYGIUM Brid.

H. MUELLERI Hpe. et C.M.

Lake Barrine, n. 643.

Helicophyllaceæ.

POWELLIA Mitt.

P. AUSTRALIS (Hpe., *Helicophyllum*) Broth.

Frenchman's Creek, n. 401. Found earlier by Dallachy at Rockingham Bay.

Rhacopilaceæ.

RHACOPILUM Palis.

RH. CONVOLUTACEUM C.M.

Babinda; Frenchman's Creek; Malanda; Ravenshoe.

Leskeaceæ.

*HERPETINEURON (C.M.) Cardot.

*H. TOCCOÆ (Sull. et Lesq., *Anomodon*) Card.

Ravenshoe, n. 598 e.p.

THUIDIUM Bryol. eur.

†TH. LILLIPUTANUM Broth.

Ravenshoe, n. 648, 665.

TH. PLUMULOSIFORME (Hpe.) Jaeg.

Stoney Creek; Frenchman's Creek; Kuranda; Ravenshoe.

†TH. SUBERECTUM (Hpe.) Jaeg.

Stoney Creek; Malanda; Ravenshoe.

[*Note.*—The following species have also been recorded for N.Q.: *Th. ramentosum* Mitt., (Bellenden Ker: Karsten); *Th. sparsum* (Bellenden Ker: Karsten), and perhaps others.—W.W.W.]

Hypnaceæ.

Stereodontecæ.

ECTROPOTHECIUM Mitt.

E. SERRIFOLIUM Broth. et Watts, n.sp.

Dioicum (?): gracile, cæspitosum, cæspitibus densiusculis, rigidis, depressis, læte viridibus, nitidiusculis; caulis elongatus, repens, fusco-radiculosus, dense subpinnatim ramosus, ramis vix ultra 5mm. longis, strictis, dense et complanate foliosis, simplicibus, obtusis; folia erecto-patentia, caulina superiora plus minusve distincte homomalla, concava, caulina ovato-lanceolata, plus minusve longe acuminata, marginibus inferne indistincte recurvis, superne erectis, argute serratis, nervis binis, brevibus, cellulis anguste linearibus, apice distinctissime papillose exstante, marginalibus in serie unica brevioribus, ramea breviter et late acuminata. Cætera ignota.

Cairns District: Millstream Falls, Ravenshoe, n. 528 (leg. Dr. Joynt).

Species *E. Zollingeri* (C.M.) Jaeg., affinis, sed foliis argute serratis jam dignoscenda.

E. UMBICULATUM (C.M., *Hypnum*) Par.

Stoney Creek; Kuranda; Babinda; Ravenshoe, etc.

*E. VERRUCOSUM (Hpe.) Jaeg.

Ravenshoe, n. 539 e.p., 606, 653 e.p., 661.

STEREODON Mitt.

S. MOSSMANNIANUS (C.M., *Hypnum*) Broth.

Millstream, Ravenshoe, n. 521 e.p.

†S. SUBCHRYSOGASTER Broth.

Rocky Hill, Kuranda, n. 680 e.p. Previous loc., Blackall Range: leg. Whitteron.

ACANTHOCLADIUM Mitt.

A. EXTENUATUM (Brid.) Mitt.

Frenchman's Creek; Malanda; Ravenshoe; Tully Falls.

A. sp.?

Ravenshoe, n. 605 e.p.

Plagiothecia.

ISOPTERYGIUM Mitt.

I. AUSTRO-PUSILLUM (C.M.) Jaeg.

Stoney Creek; Kuranda; base of Bartle Frere; Babinda.

I. CANDIDUM (C.M.) Jaeg,

Kuranda; Malanda.

I. SUBLATIFOLIUM Broth.

Base of Bartle Frere, n. 299 e.p., 305.

TAXITHELIUM Spruc.

T. KERIANUM (Broth., *Trichosteleum*) Broth., Bryales.

Base of Bartle Frere, n. 285 e.p., 298; Babinda, n. 320 e.p.; Tully Falls, n. 591 e.p., 597.

†T. NOVÆ VALESIÆ (Broth., *Isopterygium*) Broth.

Babinda; base of Bartle Frere; Malanda; Yungaburra; Tully Falls, etc.

*T. PAPILLATUM (Harv.) Broth., Bryales.

Babinda, n. 424; Frenchman's Creek, n. 362a.

T. (*Polystigma*) WATTSII Broth., n.sp.

Dioicum; robustiusculum, cæspitosum, cæspitibus densis, depressis, viridibus, nitidis; caulis elongatus, repens, per totam longitudinem fusco-radiculosus, dense pinnatim ramosus, ramis patulis, valde complanatis, dense foliosis, obtusis, rarius flagellis microphyllinis instructis, cum foliis c. 1.7 mm. latis, vix ultra 5 mm. longis, simplicibus vel longioribus, pinnatim ramulosis; folia ramea lateralialia patentia, valde concava, e basi paulum angustiore oblonga, sensim lanceolato-acuminata, marginibus erectis, apice minute serrulatis, nervis binis brevibus vel nullis, cellulis angustissimis, seriatim minutissime papillosis, basilaribus infimis vesiculosis, hyalinis. Cætera ignota.

Babinda, North Queensland, on living tree-trunks, n. 441.

Species valde peculiaris, cum nulla alia commutanda.

VESICULARIA (C.M.) C.M.

† V. RIVALIS Broth.

Stoney Creek, n. 256 e.p. A second locality. The type was collected by Watts on the Richmond River (Whian Creek).

Sematophyllaceæ.

MEIOTHECIUM Mitt.

M. BROTHERI Watts; *M. tenerum* B.P., non Mitt.

Cairns (Police paddock, on fig-tree), n. 227, 228, 230; Street's Gully, Kuranda, n. 270a, 607.

† M. WATTSII (Broth., *Pterogoniella*) Broth., Bryales.
Kuranda, n. 607c, 642.

RHAPHIDOSTEGIUM Schimp.

RH. ACICULUM (C.M.).

Stoney Creek; Kuranda; Ravenshoe, etc.

RH. OVALE Broth.

Babinda; Frenchman's Creek; Ravenshoe.

RH. PSEUDO-HOMOMALLUM (C.M.).

Kuranda; base of Bartle Frere; Babinda; Frenchman's Creek; Ravenshoe.

*RH. SAPROXYLOPHILUM (C.M.) Jaeg.

Frenchman's Creek, n. 362; *f. robusta* (n. 415).

SEMATOPHYLLUM (Mitt.) Jaeg.

S. ERYTHROPODIUM (Hpe.) Jaeg.

Malanda, n. 625 e.p. Previous record, Rockingham Bay :
Dallachy.

S. sp.? (ster.): Ravenshoe, n. 588.

S. sp.? (ster.): Tully Falls, n. 591 e.p.

*TRICHOSTELEUM (Mitt.) Jaeg.

T. (*Papillidium*) ELEGANTULUM Broth. et Watts, n.sp.

Autoicum; tenellum, caespitosum, caespitibus densis, pallide viridibus, ætate lutescenti—vel fusciscenti—viridibus, nitidiusculis; caulis breviusculus, per totam longitudinem fusco-radiculosus, dense ramosus, ramis adscendentibus, complanatis, brevibus, simplicibus vel longioribus plus minusve ramulosis; folia erecto-patentia, concava, e basi anguste oblongo-elliptica sensim lanceolata vel lanceolato-subulata, marginibus late recurvis, superne argute serratis, enervia, cellulis anguste ellipticis, superioribus papilla media altiuscula instructis, infimis aureis, alaribus magnis vesiculosis, hyalinis vel aureis; bractæ perichætii internæ erectæ, e basi vaginante in acumen loriforme, argute serratum sensim attenuatæ; seta vix ultra 8 mm. alta, tenuis, rubra, ubique mammillis humilibus latis, luteis oblecta; theca suberecta, majuscula, ovalis, fusco-rubra, lævis; operculum ignotum.

Cairns District (Frenchman's Creek), n. 382.

Species distinctissima, foliis angustis, nec non theca majuscula oculo nudo jam dignoscenda.

T. HAMATUM (Doz. et Molk.) Jaeg.

*Var. SEMIMAMMILLOSUM (C.M.) Par.

Babinda, n. 319 e.p., 337a; Frenchman's Creek, n. 362b, 383.
The var. previously recorded for Papua and the New Hebrides.

Rhegmatodontaceæ.

*MACROHYMENIUM C.M.

*M RUFUM (Reinw. et Hornsch.) C.M.

Malanda, n. 623; Ravenshoe, n. 657, 660, 662.

Brachytheciaceæ.

R H Y N C H O S T E G I E L L A (Bryol. eur.) Limpr.

RH. CONVOLUTIFOLIA (Hpe.) Broth.

Base of Bartle Frere, n. 297 e.p.

R H Y N C H O S T E G I U M Bryol. eur.

RH. NANO-PENNATUM (Broth.) Par.

Base of Bartle Frere, n. 285 e.p., 296-7; Babinda, n. 320 (*bis*); Frenchman's Creek, n. 416.

RH. TENUIFOLIUM (Hedw.) Jaeg.

Ravenshoe, n. 425 e.p., 476 e.p.; Yungaburra, n. 601.

Hypnodendraceæ.

H Y P N O D E N D R O N (C.M.) Lindb.

H. SPININERVIUM (Hook.) Jaeg.

Kuranda; Babinda; Yungaburra; Ravenshoe.

M N I O D E N D R O N Lindb.

MN. COMATULUM Geh. in Herb. Broth.

Dioicum; gracilescens, viride, ætate fuscescens, nitidiusculum; caules secundarii approximati, usque ad 4 cm. longi, a foliis squamæformibus, remotis, patentissimis, reflexis, tomento densissimo fusco-purpureo occultis obtecti, superne verticillatim ramosi, ramis 1-1.5 cm. longis, gracilibus, arcuatulis, undique dense foliosis, simplicibus: folia caulina e basi late cordata, triangularia, longe aristata, marginibus erectis, basi minute denticulatis, superne argute et inæqualiter serratis, nervo longe excedente, cellulis angustissimis, alaribus sat numerosis, ovali-hexagonis, fusco-aureis; folia ramea patentia, ovato-lanceolata, breviter acuminata, marginibus basi integris, superne argute et inæqualiter serratis, nervo apice evanido. superne dorso serrato; seta usque ad 2 cm. alta, flexuosula, tenuis, fuscidula; theca horizontalis, oblongo-cylindrica, c. 3 mm. longa; operculum e basi convexo-conica longe rostratum.

Charmellan's Creek, on Gordon's track from Ravenshoe to Tully Falls, n. 676. Mt Armit: Pentzke in Herb. Melb.(type).